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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,875	10/31/2003	Kazuhiro Machiguchi	2003_1587A	8992

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EXAMINER

LEE, SIN J

ART UNIT PAPER NUMBER

1752

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/697,875

Applicant(s)

MACHIGUCHI ET AL.

Examiner

Sin J. Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicants canceled claim 3.
2. Due to newly cited prior arts, the following rejections are made *non-final*.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1, 2, and 4-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hishiro et al (5,876,895) (with Miura et al (US 2004/0082721 A1) and Naruse et al (5,624,781) which are being cited here to support the Examiner's assertion that Hishiro's MARUKALYN CUR-CST is a copolymer of p-vinylphenol/styrene (50/50 by weight ratio)).

Hishiro teaches (see Example 1) a cyan-colored positive photosensitive composition containing 1.0 part of novolak resin (as an alkali-soluble resin), 0.6 part (*about 23 wt%*) of an o-naphthoquinonediazido-5-sulfonic acid ester (a photoactive compound), 0.3 part (*about 11 wt. %*) of hexamethoxymethylolmelamine (a curing agent), 0.75 part of Oleosol Fast Blue RL (a dye), and total sum of 7 parts (*about 264 wt% based on the solid contents*) of dimethylformamide and ethyl lactate as solvents. In col.6, lines 15-22, Hishiro furthermore teaches that his novolak resin can be used in a mixture together with alkali-soluble vinyl polymers, which include *styrene-p-hydroxystyrene copolymer* such as MARUKALYN CUR-CST. As evidenced by Miura et al (see the footnote (11) under the TABLE 4 in [0078]) and Naruse et al (see col.15,

lines 59-61), MARUKALYN CUR-CST is a copolymer of p-vinylphenol/styrene (50/50 by weight ratio).

Based on Hishiro's teaching, it would have been obvious to one skilled in the art to use a mixture of Hishiro's novolak resin and a copolymer of p-vinylphenol/styrene (50/50 by weight ratio) as Hishiro's alkali-soluble resin in his Example 1 with a reasonable expectation of obtaining a photosensitive resin composition for color filter which is excellent in resolution, heat resistance and transparency. Hishiro furthermore teaches (col.6, lines 54-56) that his alkali-soluble vinyl polymer (that is to be mixed with his novolak resins) can have a molecular weight of the order of 500-10,000. Since this range overlaps with present range, the prior art's range would render present range prima facie obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a prima facie case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, Hishiro's teaching renders obvious present inventions of claims 1, 2, 5, 6, 9 and 10.

Hishiro teaches (col.10, lines 60-67) the use of 2-50 wt% of his alkali-soluble resins and 2-50 wt% of his dye, and since the prior art's ranges overlap with present ranges, Hishiro's teaching renders obvious present inventions of claims 4, 7, and 8. See In re Wertheim, supra.

Hishiro states (col.1, lines 17-23) that color filters, especially those for solid image forming devices are used for forming a pattern of three primary colors or three

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complementary colors on a transparent or opaque substrate. Therefore, Hishiro's teaching would render obvious present inventions of claims 11 and 12.

5. Claims 1, 2, 4-6, and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurata et al (EP 0 483 693 A2) in view of Hishiro et al (5,876,895).

Kurata teaches a *colored* photosensitive resin composition for the formation of a colored image, a formation method of a colored image of a *color filter* suitable for use in *solid state camera devices*, liquid crystal display devices and the like, and a formation method of a color filter, in which the steps are repeated to form a *multi-colored image* on the same substrate (see abstract and pg.2, lines 3-5, 9-11).

The Composition 4 shown in Table 1 contains 55 wt.% of copolymer of *vinylphenol and styrene (in the ratio of 1:1)*, 16 wt.% of hexamethoxymelamine (a crosslinking agent), 6 wt.% of photoacid generator, 24 wt.% of a pigment (these wt.%'s are calculated by the Examiner based on the solid contents of the composition), and a solvent (308 parts by weight per 100 parts by weight of the solid contents, as calculated by the Examiner). Kurata does not explicitly disclose the present Mw range of claim 1. However, the prior art teaches (pg.4, lines 1-2) that it is *particularly preferable* that his resin-based material is soluble in aqueous *alkaline developing solution*, and present specification (pg.10, lines 22-28) states that if the Mw of the alkali-soluble resin is less than 6,000, the solubility of the pattern formed from the colored photosensitive resin composition in the alkaline developer increases so that the film thickness is reduced, and when the Mw exceeds 15,000, the solubility of the exposure portion of the colored photosensitive resin layer in the alkaline developer decreases to that the undissolved

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residues may remain when the pixels of the color filter are developed. Therefore, it is the Examiner's position that the present Mw range would have been obvious to one of ordinary skill in the art at the time the invention was made because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, Kurata's teaching would render obvious present invention of claim 1 except for the novolak resin. Hishiro teaches a photosensitive resin composition for color filter, which contains a specific novolak resin and other alkali-soluble vinyl polymers such as *styrene-p-hydroxystyrene copolymer* (see abstract, col.6, lines 15-22). Hishiro's composition also contains a crosslinking agent, a photoacid generating agent, dye/pigment and solvent. Hishiro teaches that his composition is excellent in resolution, heat resistance and transparency. Kurata also mentions a novolak resin as one of examples for the resin-based material which can be used in his invention (see pg.4, lines 10-13). Therefore, it would have been obvious to one of ordinary skill in the art to use Hishiro's novolak resin together with Kurata's copolymer of *vinylphenol and styrene (in the ratio of 1:1)* in Kurata's Composition 4 in order to obtain a photosensitive resin composition for color filter which is excellent in resolution, heat resistance and transparency as taught by Hishiro. Therefore, Kurata in view of Hishiro would render obvious present inventions of claims 1, 2, 6, and 9-12 (since present claim 11 is written in product-by-process claim language, and since Kurata teaches a color filter having a multi-colored image on the same substrate, the prior art teaches present color filter of

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claim 11 even if the prior art's process is different from the present steps cited in claim 11).

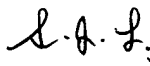
Kurata teaches (pg.6, lines 1-9) that the weight ratio of (resin-based material + photoacid generator) : pigment is preferably 90/10 to 40/60. This means that in the Composition 4 of Table 1, for 7.1 g of the copolymer of vinylphenol and styrene and 0.8 g of the photoacid generator, there can be 0.9-12 g of the pigment. This gives 5-54 wt.% of the pigment based on the solid components. Since this range overlaps with present range of claim 4, the prior art's teaching would render present range *prima facie* obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a *prima facie* case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, Kurata's teaching would render obvious present invention of claim 4.

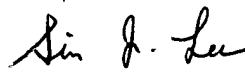
Kurata teaches that the photoacid generator of his composition is preferably used in the amount of 0.5-30 wt.% based on the solid contents (see pg.5, lines 29-31). Since this range overlaps with present range of claim 5, the prior art's teaching would render present range *prima facie* obvious. See In re Wertheim, supra. Therefore, Kurata's teaching would render obvious present invention of claim 5.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


S. Lee
August 16, 2005


SIN LEE
PRIMARY EXAMINER